Republic of Uganda

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US 153-2 (2000) (English): Uncoated aluminuim hollowware utensils- Part 2: Domestic aluminium cooking pans

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US 153-2: 2000

UGANDA STANDARD

Specification

for

Uncoated aluminuim hollow –ware utensils-

Part 2:

Domestic aluminium cooking pans

First Edition: 17th November 2000

UGANDA NATIONAL BUREAU OF STANDARDS

Price Group: C

Descriptors: Aluminium, Hollow-ware, Domestic, Cooking Appliances

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AMENDMENTS

Clause	Amendment No.	Date of Issue	Text affected

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0.1 Foreword

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Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments, which are reviewed before recommending them to The National Standards Council for declaration as National Standards.
This Uganda Standard US 153-2:1999 was prepared the Technical Committee UNBS/TC4; Mechanical Engineering and Metallurgy.

0.2 Committee Membership

The following organisations were represented on the Technical Committee

- Department of Mechanical Engineering, Makerere University Kampala- Chairman
- Chemistry Department, Makerere University Kampala
- Department of Mechanical Engineering, Uganda Polytechnic Kyambogo
- Steel Rolling Mills
- GM-TUMPECO
- Shumuk Aluminium Rolling Mills
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Specification for uncoated aluminium hollow-ware utensils-

Part 2:

Domestic aluminium cooking pans

1 Scope

This Part 2 of the Uganda standard specifies the materials construction and preferred sizes of uncoated aluminium pans. This standard covers aluminium saucepans, stew pans and frying pans.

2 Normative references

The following standard contains provisions which, through reference in this text constitute provisions of this standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standard indicated below. Information on currently valid national and international standards may be obtained from the Uganda National Bureau of Standards Information and Documentation Center.

US 328-1 *Wrought Aluminum and Aluminum alloy sheets strips and plates.*
Part 1: Technical conditions for inspection and delivery

US 328-2 *Wrought Aluminum and Aluminum alloy sheets strips and plates.*
Part 2: Mechanical properties

US 328-3 *Wrought Aluminum and Aluminum alloy sheets strips and plates.*
Part 3: Strips- Tolerances on shape and dimensions

US 328-4 *Wrought Aluminum and Aluminum alloy sheets strips and plates.*
Part 4: Sheets and plates- Tolerances on shape and dimensions

US 275-1 *Wrought Aluminum and Aluminum alloys. -Chemical composition and forms of products - Part 1: Chemical Composition*

3 Freedom from toxicity

The pans shall be made of aluminium of a purity such that under normal conditions of use no toxic hazards shall arise. It is a legal requirement that the utensils shall comply with the provisions of the Food and Drugs Regulations of this country.

The suitable material shall be as specified in US 275-1 *Wrought Aluminum and Aluminum alloys - Chemical composition and forms of product - Part 1: Chemical Composition.*

4. Dimensions

4.1 Sauce Pans

Overall dimensions, finished thickness and capacities of saucepans shall be in accordance with details given in Tables 1, 2, 3, and 4, except that the shape of the saucepans need not be cylindrical provided that the stated capacity is correct.

4.2 Frying Pans

Overall dimensions and finished thickness shall be as given in Tables 5, 6, 7 and 8. The capacity given for saucepans is the gross capacity obtained when the utensil is filled to the brim with water at 25°C ± 1°C and allowed to level off for 1 min while standing on a level base. It shall be accurated within an excess of 5 per cent of the capacity stated. The capacity shall be not less than the stated capacity and shall not exceed the capacity stated by more than 5 per cent.

5 Material

5.1 The pans shall be made of materials that satisfy the following requirements related to contact with food or steam.

The pan shall not discolour or spoil the flavour or odour of food cooked in the pan, or cause it to become toxic in any degree.

The material used shall be of alluminium sheet or strip complying with the requirements of the following Uganda Standards; US 328-1, US 328-2, US 328-3, US 328-4, 275-1.

6 Construction

6.1 Bodies

The manufacturing process shall leave the bodies of pans smooth (except for machined bases) and they shall be free from tool marks, cracks or splits, flow lines and other defects inside and outside. No defects shall be made good by filling and patching. Pans intended to be heated on a solid top hotplate shall have a machined base which shall not be convex and not be more than 0.50 mm in 1 m concave. The bases of all other pans shall be essentially flat and not convex. The shape of the pan shall be such that it stands stable both when empty and when full. This shall be checked both before and after submission to the heat test given in Clause **11.**

6.2 Body Handles

The number and types of handles and the length of straight handles shall be as shown in Tables 1 to 8. Solid flange loop handles may be fitted as an alternative to loop handles where the latter are specified.

Handles shall be placed sufficiently above the centre of gravity of the pan when it is in use to ensure stability when it is lifted. The masses of straight handles shall be such that pans are stable when placed empty on a level surface. All handles shall be free from burrs and sharp edges and if tinned loop handles are used they shall be free from roughness of the tinning.

6.2.1 Metal loop handles shall have a hand clearance within the loop of not less than 60 mm x 20 mm measured horizontally for the 160 mm size of pans and up to 95mm x 45 mm for the 510 mm size. Solid flange loop handles shall project the same distance from the wall of the utensil as loop handles which comply with this requirement

6.2.2 Straight stem handles having fixing flanges shall be riveted to the body of the pan by at least three mushrooms headed rivets. Loop handles shall have not less than two lugs with two rivets for each lug.

6.2.3 The rivets shall be mushrooms headed with the heads inside the body of the pan. Externally, the snap heads shall be either mushroom or half-round and shall be tightly closed. All joints between the flange and body shall be watertight and so closed that entry of foreign matter into the joint is prevented. For commercial utensils, straight and loop handles shall be of the solid metal type or of metal tubular.

6.2.4 Handles for domestic types consisting of plastic mouldings or wood fixed screws or nuts on a metal reinforcement shall have a looking washer or other locking device,

which holds them secure. Metal reinforcements shall be at least 4 mm in diameter and fixing screws or other features shall be of stainless steel or metal adequately protected against corrosion. If made of metals other than stainless steel, they shall comply with the requirements given in Table 1 that are appropriate to the finish used. Handles incorporating plastic materials shall show no visible sign of degradation after exposure to an oven temperature of 120 °C for 4 h.

6.2.5 The handles of frying pans shall tilt above the horizontal so that there is a clearance of at least 38 mm between the handle and the projection of the surface of the base of the pan at the position at which the hand is applied.

6.3 Body Handle Temperatures

When tested in accordance with the method given in Clause 11, the average temperature attained by metal handles of the straight stem type shall not exceed 75 °C. Plastic and wood handles of the straight stem type shall not exceed 54 °C for plastics and 50 °C for wood.

For plastic and wooden handles, the upper exposed length of metal adjoining the body shall be in the range 20 mm to 25 mm on saucepan and 30 mm and 40 mm on frying pans. The average temperature attained by metal loop handles or solid metal flange loop handles shall not exceed 75 °C, except for plastics-clad loop handles or solid plastics on metal flange loop handles the average temperature shall not exceed 65 °C

6.4 Lids

Lids shall be of a similar material to that of bodies of the pans and shall comply with the requirements specified in Clause **2** and the details given in Tables 2, 3 and 4.

Lids shall have a flange or skirt fitting inside the body not more than 2.5 mm. Any curves folds or swages on the lid shall be left open enough for them to be cleaned thoroughly. Alternatively, a flat lid swaged to fit may be provided.

6.5 Lid Handles

Handles or knobs shall be firmly and closely attached to the lid. All burrs and sharp edges shall be removed. Shapes other than round shall be fixed at two points. Where knobs are attached by a single central threaded attachment, the diameter of the threaded portion shall be not less than 4.5 mm. If the attachment is a separate screw, the head shall be mushroom shaped, and a non-corrodible locking device shall be used. Strap type handles shall be attached by two rivets of not less than 4.5 mm in

diameter or four rivets of not less than 3.0mm diameter. All rivets shall be well shaped over.

Plastic and wood handles of the straight stem type shall not exceed 54 °C for plastics and 56°C for wood. In the latter type of handle, the upper exposed length of metal adjoining the body shall not exceed 25 mm on saucepans and 40 mm on frying pans. The average temperature attained by metal loop handles or solid metal flange loop handles shall not exceed 75 °C, except for plastics-clad loop handles or solid metal flange loop handles the average temperature shall not exceed 65 °C.

7. Strength of handles and means of attachment

7.1 Body Handles

The strength of the handle and means of attachment shall comply with the requirements of the test given in Clause 11 without permanent visible distortion or loosening of the fastening. The body of the utensil shall, not be permanently distorted to a visible extent. In addition, for handles attached by a single welded stud, no visible distortion of the stud or weld shall take place when a torque of 11Nm is applied to the handle stud after welding.

7.2 Lid Handles

For handles or knobs attached by means of welded stud, no visible distortion of the stud or weld shall take place when a torque of 4 Nm is applied to the stud after welding.

7.3 Leakage

Any pan designed to hold liquids shall show no leakage during application of the test given in Clause **11**.

8 Distortion

When a pan is filled to 95 per cent of its maximum capacity with water it shall not be permanently distorted. Also when picked up in the normal manner, and filled with 95 per cent of its maximum capacity with water it shall show no temporary distortion and shall still retain liquid without spilling.

9. Inspection and criteria of conformity

Pan from materials produced in the same way shall undergo tests specified in Clause 11 and be tested for conformity to the requirements of this specification. A pan shall be rejected if it fails to conform to all the requirements of this standard.

10. Marking

Every pan shall be legibly and permanently marked externally with the following particulars:

(i) The manufacturer's name and/or trade mark.

(ii)The gross capacity in litres (where applicable),

(iii)The number of this Uganda Standard.

11 Tests

11.1 Method for the Determination of resistance to heat of Saucepans and Similar Utensils

11.1.1 Fill the cooking utensil with cold water to within 80 per cent of the gross capacity, or above the handle fixing points, whichever is greater, and subject it to four periods each of 6 hours, of continuous heating with the contents maintained at boiling point and topped up periodically with cold water at 15 °C to 18 °C .The source of heat for which the utensil was designed as given in Tables 2 to 5 inclusive, shall be used. After the first and last heating period, allow the contents to cool to room temperature, and after the second and third periods, empty the hot liquid and refill immediately with cold.

Temperature tests on the handles may be carried out during one of these tests if boiling without cooling has been proceeding for not-less than 15 min, care being taken that extraneous heat has not reached the handle in the interim.

11.1.2 Frying Utensils other than Shallow Frying Pans

Fill the utensil with cooking oil , to half its depth, maintained at 180 °C ± 5°C for four periods, each of 3 h. Allow to cool at room temperature in between heating periods. Empty and refill with cold oil after the second heating period. The source of heat, for which the utensil was designed as given in Tables 2 to 5 inclusive, shall be used.

Temperature tests on the handle may be carried out after the utensil has been heated for a period of not less than 30 min, care being taken that extraneous heat has not reached the handle in the interim.

11.1.3 Frying Pans

Test frying pans for 1 h with 6 mm depth of oil in the pan at 230 °C ±5 °C . The source of heat for which the utensil was designed, as given in Tables 6 to 8 inclusive, shall be used.

11.2 Methods of Determination of Thermal Insulation of Handles.

Carry out the test in draught-free conditions and in ambient temperature of 15 °C to 20 °C. Fill the utensil with cold water to above the level of the main handle connection. Heat the water to boiling point on a gas ring or electric hotplate and adjust the heat to keep the water gently boiling. After the water has been-boiling for at least 15 min, or after 25 min from the commencement of the test, whichever is the longer, take the temperature of the upper surface of the handle at a point halfway along the handle or the insulated portion of the handle, whichever is applicable, by means of a thermocouple or other suitable accurate measuring device. Repeat the test twice more and record the average of the three temperatures. The source of heat shall extend over the whole area of the base of the utensil but shall not extend beyond this in the area below the handle.

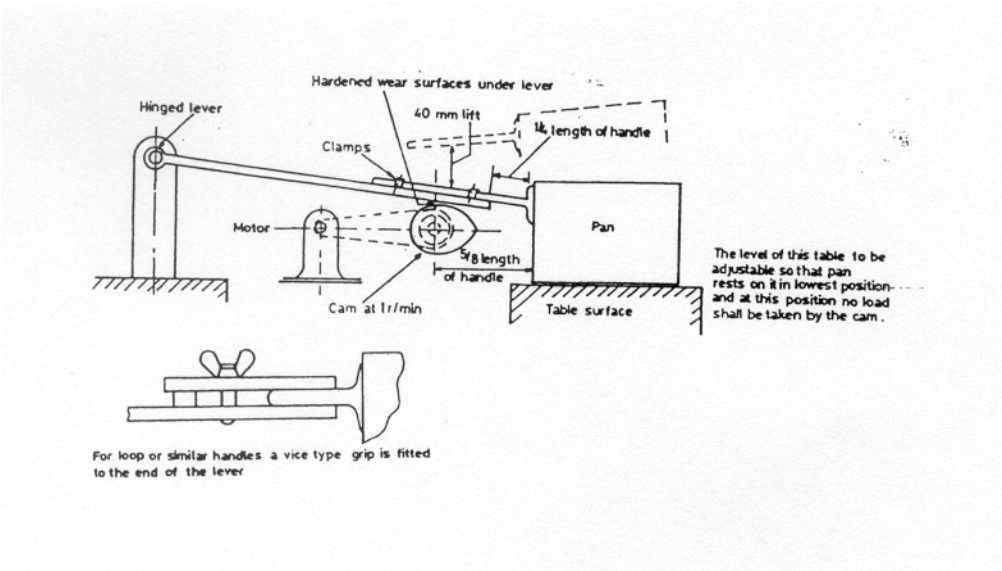
For utensils in which cooking oil will be used, the oil shall be substituted for water in the test and the temperature shall be raised to and maintained at 180 °C ± 5 °C or 230 °C ±5 °C as appropriate in accordance with Clauses **11.1.2** and **11.1.3**.

11.3 Method of Test for Strength of Body Handles and Means of Attachment

11.3.1 Saucepans Fitted With One Straight or One Straight and One LoopHandle

Place in the utensil a quantity of lead shot of mass equal to that of a volume of water equivalent to 21 times the gross capacity of the utensil. Attach the utensil to a level as shown in Figure 1. Lift it off and lower it on to a flat surface once per minute for 24 h by means of a rotating cam.

When the utensil has two handles, each shall be tested separately but the mass of lead shot in the appliance shall be reduced by half. Pans of diameters up to and including 180 mm with one straight and one loop handle shall be tested as pans with one straight handle.


Hardened wear surfaces under lever
Hinged lever
40 mm lift
Clamps
length of handle
Motor
Pan
length of handle
The level of this table to be adjustable so that pan rests on it in lowest position and at this position no load shall be taken by the cam.
Cam at 1r/min
Table surface
For loop or similar handles a vice type grip is fitted to the end of the lever

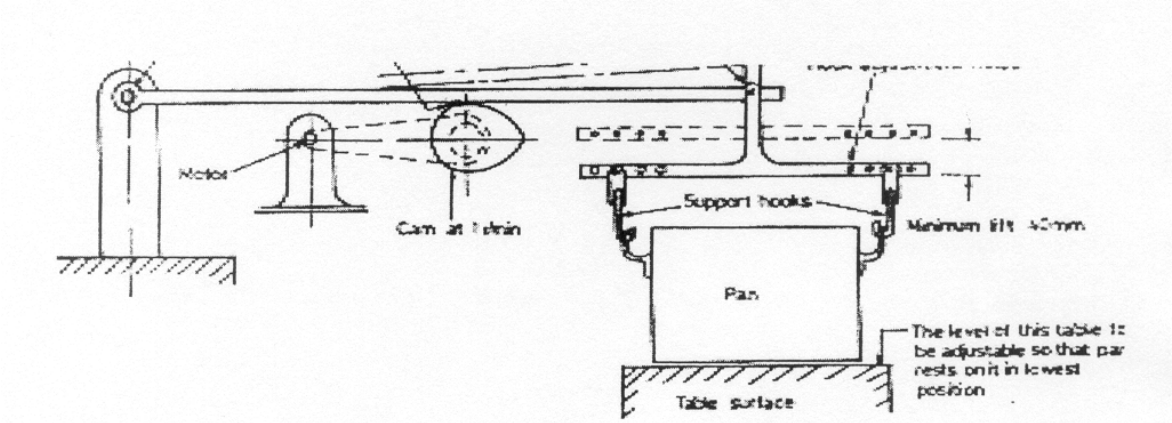
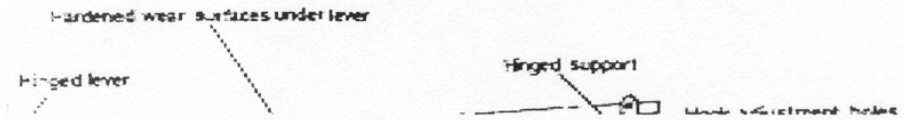

Motor
Cam at 1r/min
Support hooks
Minimum lift 45mm
Pan
The level of this table is be adjustable so that pan rests on it in lowest position
Table surface

FIG. 2 - TEST FOR STRENGTH OF TWO LOOP HANDLES AND METHOD OF ATTACHMENT



11.3.2 Saucepans Fitted With Two Loop or Two Solid Flange Loop Handles

Place in the utensil a quantity of lead shot of mass equal to that of a volume of water equivalent to 21 times the gross capacity of the utensil. Attach the utensil to a lever as shown in Figure 2. Lift it off and lower it on to a flat surface once per minute for 24 h by means of a rotating cam.

Table 1: Saucepans – Commercial types

Gross capacity	base diameter	thickness of base (min)	thickness of edge wall (min)	thickness of flanged wall (min)	body handles		lids		
					Number required	Length of Straight Handles (min)	Thickness of Flat Lids	Thickness of Domed Lids	Lid Handles
litres	mm	mm	mm	mm	One straight or two loop	mm	mm	mm	One knob or strap
2.0	160	2.5	1.8	1.2		165	1.2	1.0	
3.0	180								
4.0	200	2.0	1.8	1.6	One straight	200	1.6	1.2	
5.0	220	2.0	1.8	1.6	and one loop	200	1.6	1.2	
7.0	240	3.0	1.8	1.6	or two loops	200	1.6	1.2	
				1.8					
10.0	280	3.0	2.0	2.0			2.0	1.6	One strap
13.5	310	4.0	2.5	2.0	Two loop		2.0	1.6	
18.0	330	4.0	2.5	2.0			2.0	1.6	
23.0	360	4.0	2.5	2.0			2.0	2.0	
34.0	400	4.0	2.5	2.0			2.5	2.0	
48.0	450	5.0	3.0	2.5			2.5	2.0	
65.0	510	5.0	3.0	2.5			2.5	2.0	

Table 2: Saucepans – Domestic types for gas cookers

Gross capacity	Base diameter	thickness of base (min)	thickness of plain edge wall (min)	thickness of flanged edge wall (min)	body handles		lids		
					Number required	Length of Straight Handles (min)	Thickness of Flat Lids	Thickness of Domed Lids	Lid Handles
litres	mm	mm	mm	mm	One straight or two loop	mm	mm	mm	One knob or strap
1.0	120	1.8	1.6	1.2		150	1.2	0.9	
1.5	140	1.8	1.6	1.2		150	1.2	0.9	
2.0	160	1.8	1.6	1.2		150	1.2	0.9	
3.0	180	1.8	1.6	1.2		150	1.2	0.9	
4.0	200	2.0	1.8	1.6	One straight	150	1.6	0.9	One knob
5.0	220	2.0	1.8	1.6	and one loop	165	1.6	1.2	or strap
7.0	240	3.0	1.8	1.6	or two loops	165	1.6	1.2	

Table 3:Saucepans – Domestic types for electric cookers

Gross capacity	base diameter	thickness of base (min)	thickness of edge wall (min)	thickness of flanged wall (min)	body handles		lids		
					Number required	Length of Straight Handles (min)	Thickness of Flat Lids	Thickness of Domed Lids	Lid Handles
litres	mm	mm	mm	mm	One straight or two loop	mm	mm	mm	One knob or strap
1.0	120	2.5	1.8	1.2		150	1.2	0.9	
1.5	140	2.5	1.8	1.2		150	1.2	0.9	
2.0	160	2.5	1.8	1.2		150	1.2	0.9	
3.0	180	2.5	1.8	1.2		150	1.2	0.9	
4.0	200	3.0	2.0	1.8	One straight and one loop or two loops	150	1.6	0.9	One knob or strap
5.0	220	3.0	2.0	1.8		165	1.6	1.2	
7.0	240	3.0	2.0	1.8		165	1.6	1.2	

Table 4:Saucepans – Commercial and Domestic types

Base diameter mm	thickness of base mm
120 to 160	**5**
180 to 240	**6**
above 240	**7**

Table 5: Frying pans without ground base: Commercial types

top diameter	Thickness of base	thickness of plain edge walls (min)	thickness of flanged edge walls (min)	Handles	
				number required	Length of Straight Handles (min)
mm	**mm**	**mm**	**mm**		**mm**
		2.5	1.8		
220	3	2.5	1.8	One	165
240	3	2.5	1.8	straight	165
280	3	2.5	1.8		180
310	3	2.5			180
			1.88		
				One straight or two loop	240

Table: 6 Saucepans without ground base: Domestic types

top diameter	thickness of base	thickness of plain edge walls (min)	thickness of flanged edge walls (min)	Handles	
				Number required	Length of Straight Handles (min)
mm	**mm**	**mm**	**mm**		**mm**
100					150
200					150
220					165
240	2.5	1.8	1.6	One	165
260				straight	180
280					180

Table 7: Frying pans with ground base: Commercial types

Top diameter	thickness of base	thickness of plain edge walls (min)	thickness of flanged edge walls (min)	Handles	
				Number required	Length of Straight Handles (min)
mm	mm	mm	mm		mm
220	6			One straight	165
240	6	2.5	2.8		165
280	6				180
310	7				180
				One straight or two loop	240

Table 8 : Frying pans with ground base: Domestic types

Top diameter	Thickness of base	Thickness of plain edge walls (min)	Thickness of flanged edge walls (min)	Handles	
				number required	Length of Straight Handles (min)
mm	mm	mm	mm		mm
180		2.5	2.0		150
200	6	2.5	2.0	One straight	150
220	6	2.5	2.0		165
240	6	2.5	2.0		165
260	6	2.5	2.0		180
280	6	2.5	2.0		180

Annex A (informative)

Bibliography

[1] ISO 6361-1: 1986 *Wrought Aluminum and Aluminum alloy sheets strips and plates. Part 1: Technical conditions for inspection and delivery*

[2] ISO 6361-2: 1986 *Wrought Aluminum and Aluminum alloy sheets strips and plates. Part 2: Mechanical properties*

[3] ISO 6361-3: 1986 *Wrought Aluminum and Aluminum alloy sheets strips and plates. Part 3: Strips- Tolerances on shape and dimensions*

[4] ISO 6361-4: 1986 *Wrought Aluminum and Aluminum alloy sheets strips and plates. Part 4: Sheets and plates- Tolerances on shape and dimensions*

[5] ISO 209-1: 1989 *Wrought Aluminum and Aluminum alloys - Chemical composition and forms of products- Part 1: Chemical Composition*

[6] ISO 209-2: 1989 *Wrought Aluminum and Aluminum alloys. -Chemical composition and forms of products - Part 2: Forms of Products*

[7] KS 06-0476: 1999 ***Specification for Uncoated Aluminium Hollow-ware utensils-*** *Part 1: Domestic Aluminium cooking pots "Sufuria" and lids*

[8] BS 4083: 1987 *Specification for Uncoated Aluminium Utensils*

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